



The Installation of RRD Measurement Archive (MA)

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LAB Configuration

- Dante server
 - srv2.ams.nl.geant2.net
 - Linux
 - Lab user accounts: ps01, ps02, ps03, ..., ps20
- PSNC server (1)
 - temp1.poz.pl.geant2.net
 - Linux
 - Lab user accounts: ps21, ps22, ..., ps25
- PSNC server (2)
 - temp2.poz.pl.geant2.net
 - Linux
 - Lab user accounts: ps26, ps27, ..., ps30





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Server pre-requisites

- OS platform: Linux (well tested and suggested) or other unix-like system
 - RedHat distro in LAB servers
- Perl (common installation)





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perfSONAR package (1)

- Current official production release: v1.0
<http://www.perfsonar.net/download.html>

This presentation shows the installation of the official production release (v1.0)

- Current developer snapshot release: 20060907
[http://wiki.perfsonar.net/jra1-wiki/index.php/PerfSONAR Java RRD MA snapshots](http://wiki.perfsonar.net/jra1-wiki/index.php/PerfSONAR_Java_RRD_MA_snapshots)
- Developer SVN repository
http://wiki.perfsonar.net/jra1-wiki/index.php/SVN_usage_details



perfSONAR package (2)



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- Unpack RRD MA installation archive file: perfsonar-1.0.tar.gz

```
tar xvfz perfsonar-1.0.tar.gz
```
- Go to the file perfSONAR-1.0/Readme.txt ...





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perfSONAR Readme.txt

Follow the file perfSONAR-1.0/Readme.txt

- Installation of development environment Java 1.5 (done in LAB servers)
- Installation of Round Robin Database RRDTOol (done in LAB servers)
- Installation of the application server Tomcat (ver. 5.0.28)
 - <http://www.apache.org/dist/tomcat/tomcat-5/v5.0.28/bin/jakarta-tomcat-5.0.28.tar.gz>
 - `tar xvfz jakarta-tomcat-5.0.28.tar.gz`
- Installation of the web service container Axis (ver. 1.4)
 - <http://www.apache.org/dist/ws/axis/1.4/axis-bin-1.4.tar.gz>
 - `tar xvfz axis-bin-1.4.tar.gz`
 - Copy \$AXIS/webapps/axis into \$TOMCAT/webapps/
`cp -R $AXIS/webapps/axis $TOMCAT/webapps/`



Lab configuration of Tomcat ports (1)



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- Shutdown ports
 - User account ps01: 8001
 - User account ps02: 8002
 - ...
 - User account ps30: 8030
- non-SSL Coyote HTTP/1.1 Connector ports
 - User account ps01: 9001
 - User account ps02: 9002
 - ...
 - User account ps30: 9030

Lab configuration of Tomcat ports (2)



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- Change the ports in the file `$TOMCAT/conf/server.xml`
- Change the shutdown port
`<Server port=„8005” shutdown=„SHUTDOWN” debug=„0”>`
- Change the non-SSL Coyote HTTP/1.1 Connector port
`<Connector port=„8080”>`
- Comment or remove Coyote/JK2 AJP 1.3 Connector on port 8009
`<!-- <Connector port="8009,, enableLookups="false" redirectPort="8443"
debug="0,, protocol="AJP/1.3" /> -->`
- Save the changes and restart the Tomcat
`$TOMCAT/bin/shutdown.sh`
`$TOMCAT/bin/startup.sh`



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Installation script (1)

Step 1: Run the installation script

```
perfSONAR-1.0/install.pl
```

The following information is required by the installer script to install RRD MA service:

- The path of perfSONAR release package
- The path of Java installation
- Host name where the service is being installed
- Parameters for log files
- The path of eXist xml database (this question is not important for this test installation)
- The path of Tomcat installation
- The path of Axis inside the Tomcat
- The port number of Tomcat





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Installation script (2a)

Step 2: Setup Environment Variables and start the Tomcat

- Set CLASSPATH variable
 - Use Value suggested by the installation script
- Start the Tomcat
 - To start the Tomcat the following script must be executed:

```
$TOMCAT/bin/startup.sh
```
- Set LD_LIBRARY_PATH
 - Path of directory with RRDTool library files
 - Use value suggested by the installation script
- Open a separate console
 - We will use this console to start and stop Tomcat
 - This will avoid halting the installation script
 - REMEMBER: CLASSPATH AND LD_LIBRARY_PATH have to be set in the console
 - Tomcat needs these variables



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Installation script (2b)

Start process of the Tomcat may take some time (seconds)

- The end of initiation can be checked in the log file
\$TOMCAT/log/catalina.out

```
tail -f $TOMCAT/log/catalina.out
```

- The following line must appear in the log file:
INFO: Server startup in xxx ms
- After the initiation the Tomcat can interact



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Installation script (2c)

An example of the path of RRDTOol library files

```
$ls -al /usr/lib/*rrd*  
-rw-r--r-- 1 root root 388018 Jun 20 2005 /usr/lib/librrd.a  
-rwxr-xr-x 1 root root 849 Jun 20 2005 /usr/lib/librrd.la  
lrwxrwxrwx 1 root root 15 Jun 20 2005 /usr/lib/librrd.so -> librrd.so.2.0.4  
lrwxrwxrwx 1 root root 15 Jun 20 2005 /usr/lib/librrd.so.2 -> librrd.so.2.0.4  
-rwxr-xr-x 1 root root 278796 Jun 20 2005 /usr/lib/librrd.so.2.0.4  
-rwxr-xr-x 1 root root 171224 Jan 17 2005 /usr/lib/librrdPlugin-3.0.so  
-rw-r--r-- 1 root root 252508 Jan 17 2005 /usr/lib/librrdPlugin.a  
lrwxrwxrwx 1 root root 19 Jan 17 2005 /usr/lib/librrdPlugin.so -> librrdPlugin-3.0.so  
[...]
```

The path should be /usr



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Installation script (3a)

Step 3: Answer more questions

Default answers included in the brackets. Press enter to accept default answer

- General service name
- Access Point (URL of the service)
- RRD MA service name
- Service type
- Service description

No LS installation or registration in this Lab Session

- Answer to question about registration with LS is **NO**





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Installation script (3b)

- Installation script requires the path of metadata configuration file
 - For this lab, use the **default** one
- eXist xml database will not be used
 - Answer is **NO**
- Installation of LS service
 - Answer is **NO**
- Clean installation operation
 - Answer is **NO**

- After finishing the installation process, restart the Tomcat
 - Use the other console where environment variables (CLASSPATH and LD_LIBRARY_PATH; see step 3) have been set up

```
$TOMCAT/bin/shutdown.sh
```

```
$TOMCAT/bin/startup.sh
```





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Testing

Run the script `perfSONAR-1.0/scripts/test-ma.sh` to test the service

- The script sends example requests to the service and receives responses from the service

... and that's all. This was the minimum installation procedure.
But the RRD MA can be enhanced...





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Troubleshooting

- Missing libjrrd.so file in LD_LIBRARY_PATH
 - `org.perfsonar.service.commons.exceptions.SystemException: [unknown]: RRDStorageManager.rrdFetch: Cannot connect with rrdjtool native library: no jrrd in java.library.path`
 - Diagnosis
 - Missing entries in LD_LIBRARY_PATH
 - Use Make in `perfSONAR-1.0/contrib/rrdjtool/native`
- RRD file from a different platform
 - `org.perfsonar.service.commons.exceptions.SystemException: [unknown]: RRDStorageManager.rrdFetch: Cannot retrieve data from rrdjtool library: RRDFETCH failed: This RRD was created on other architecture`
 - Diagnosis: RRD file created on a different platform
 - Use test rrd file from `/home/psxx` directory



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Advanced features

- Use of xml database (eXist) as a storage for rrd metadata configuration file
 - large rrd metadata configuration files
- The service may accept request with measurement data and store them
- The service may register in the Lookup Service

To switch on the advanced features visit the wiki page:

http://monstera.man.poznan.pl/jra1-wiki/index.php/Installation_MA



RRD metadata configuration file



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- The meta description of measurement data stored in rrd files
- Pairs of metadata (the description of interface) and data with a key (location of measurement data)
 - An example on the next slide
- NMWGV2 XML schema
- Text file in the simple base installation (only if the meta description is rather small) or xml database eXist (if the meta description is large)

RRD metadata configuration file (example)



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```
<nmwg:store xmlns:nmwg="..." ..>

  <nmwg:metadata id="meta1">
    <netutil:subject id="subj1">
      <nmwgt:interface>
        <nmwgt:ifAddress type="ipv4">10.1.2.3</nmwgt:ifAddress>
        <nmwgt:capacity>1000BaseT</nmwgt:capacity>
        ...
      </nmwgt:interface>
    </netutil:subject>
    <nmwg:eventType>utilization</nmwg:eventType>
  </nmwg:metadata>

  <nmwg:data id="data1" metadataIdRef="meta1">
    <nmwg:key>
      <nmwg:parameters>
        <nmwg:parameter name="file">/opt/data/rrd/test/test.rrd</nmwg:parameter>
        <nmwg:parameter name="dataSource">bytes</nmwg:parameter>
        <nmwg:parameter name="valueUnits">Bps</nmwg:parameter>
      </nmwg:parameters>
    </nmwg:key>
  </nmwg:data>

</nmwg:store>
```





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Conclusion

- The next official release of the perfSONAR (expected soon) will contain the already implemented improvements for RRD MA
 - Improvements are currently available from perfSONAR SVN or snapshots
- Integration of your service with perfSONAR UI is the next step
 - Luchesar Iliev
- Questions?

